DOCUMENT RESUME

ED 291 247 FL 017 175

AUTHOR Crandall, JoAnn; And Others
TITLE Integrating Language and Content Instruction for Language Minority Students. Teacher Resource Guide Series, Number 4.
INSTITUTION National Clearinghouse for Bilingual Education, Wheaton, MD.
SPONS AGENCY Office of Bilingual Education and Minority Languages Affairs (ED), Washington, DC.
PUB DATE Sep 87
CONTRACT 300860069
NOTE 18p.
AVAILABLE FROM National Clearinghouse for Bilingual Education, 11501 Georgia Ave., Wheaton, MD 20907.
PUB TYPE Guides - Classroom Use - Guides (For Teachers) (052)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Bilingual Education; Elementary Secondary Education; Higher Education; *Interdisciplinary Approach; Lesson Plans; *Limited English Speaking; *Minority Groups; Program Development; *Second Language Instruction; Teaching Guides
IDENTIFIERS *Content Area Teaching

ABSTRACT

The guide is designed to introduce teachers and administrators to approaches for combining language and content instruction in English as a second language, bilingual education, foreign language education, mainstream classes, and content area instruction, and to provide suggestions and resources for implementing the approaches. It describes an activity carried out in a class of limited-English-speakers, examines what is accomplished the activity, discusses the principles underlying the integration of language and content area instruction, and outlines three approaches: developing a single lesson, developing a unit in one academic area, and developing a content-based or sheltered English curriculum. Aspects of program acceptance and administration are discussed, potential problem areas are noted, and three sample lesson outlines are appended. A list of references is also supplied. (MSE)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED291247

ncbe

Integrating Language and Content Instruction for Language Minority Students

by

JoAnn Crandall
George Spanos
Donna Christian
Carmen Simich-Dudgeon
Karen Willetts

Center for Applied Linguistics

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

E Cubillos

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

✓ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

FL017175

BEST COPY AVAILABLE

Teacher Resource Guide Series **September 1987**

the national clearinghouse for bilingual education **Number 4**

This publication was prepared under Contract No. 300860069 for the Office of Bilingual Education and Minority Languages Affairs (OBEMLA), U.S. Department of Education. The contents of this publication do not necessarily reflect the views or policies of the Department of Education, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.

Enrique M. Cubillos, Director
Lorraine Valdez Pierce, Series Editor

ncbe the national clearinghouse for bilingual education

11501 Georgia Avenue, Wheaton, Maryland 20902

Preface

Teacher Resource Guides have been submitted to NCBE by practitioners involved in teacher education, research, and the education of language minority students. These Guides are intended to be practical resource guides on current or innovative teaching practices in bilingual education and in the education of limited-English-proficient students. Every effort has been made to cull the most practical aspects of each curriculum guide and to incorporate these into a concise classroom resource with sample lesson plans or activities.

This year's NCBE Teacher Resource Guide Series revolves around literacy instruction and the integration of language and content-area instruction, areas of particularly high interest to practitioners in the field. Specifically, the four 1987 Guides address: (1) developing materials and activities for promoting English language and literacy skills among young children from nonliterate backgrounds; (2) integrating native language, ESL, and content-area instruction in science and math at the elementary level; (3) developing literacy materials and integrating language and content instruction for secondary students with limited formal schooling experience; and (4) approaches to integrating language and content instruction for language minority students.

Lorraine Valdez Pierce
Teacher Resource Guides
Series Editor

Introduction

The purpose of this guide is to:

1. introduce teachers and administrators to approaches for combining language and content instruction (in ESL, bilingual, foreign language, mainstream, and content classes); and

2. to provide suggestions and resources for implementing these approaches.

This guide is an outgrowth of a number of projects undertaken by the Center for Applied Linguistics in collaboration with elementary, secondary, and college teachers in both language and content areas. That work has included research into the language skills required for mathematics and science learning, development of math-language and science problem-solving materials, and the designing of a content-based ESL curriculum for grades K-6. Some of this work has been supported by the Center for Language Education and Research (CLEAR) funded by the Office of Educational Research and Improvement (OERI) of the U.S. Department of Education; by the Secretary's (of Education) Discretionary Fund for Mathematics, Science, and Critical Foreign Languages; and by the Fund for the Improvement of Postsecondary Education (FIPSE).

A Language-Sensitive Content Class

Thirty Chinese students with limited English proficiency (LEP students) are engaged in lively conversation as they await their teacher. This is a ninth-grade science class in an intermediate school located in the Chinatown of a major metropolitan city. Students are seated in groups of four or five at round wooden tables, conversing in a mixture of Mandarin and Cantonese, with a sprinkling of English. The instructor enters and begins to distribute the contents of a large brown bag. The students continue to chatter in Chinese, their interest piqued by the paper towels, soup-sized plastic bowls, rolls of masking tape and pennies that she lays out in the middle of the wooden tables.

Speaking in English, the instructor tells each group to choose a student as recorder. Once the students have done this, she asks the recorder to jot down the following instructions:

1. Tape the penny to the middle of a plastic bowl.

2. Fill another bowl with water.

3. Place the bowl with the penny in the middle of the table.

4. Look at the penny and move back until you can no longer see the penny. Stay still.

5. Choose one student to fill the penny bowl with water from the other bowl.

6. The rest of you stay where you are. Observe what happens. Discuss this with your group.

7. Tell your recorder to write down what you have observed.

When the teacher says "Begin," the resulting scene is tumultuous, as students start to order one another to carry out the directions in a combination of English and Chinese. Naturally, there are a few hitches--for example, spilled water and students falling off their chairs as they attempt to position their bodies to make the pennies disappear. The teacher calmly moves from group to group to ask questions like "What step are you on?" or "What happens to the pennies when you put water in the bowl?"

Once all the groups have completed the seven steps, the instructor reconvenes the class. When she asks for volunteers to report on what happened, eager students vie with each other for the opportunity to speak. It is interesting to note that the students' conversations have now shifted to English and that the reports are surprisingly fluent.

With about fifteen minutes left, the teacher asks the students to explain in writing why they think the pennies seemed to move as water was added to the bowls. Several students begin referring to their science textbooks, specifically to the section which deals with refraction, or the bending of light. At this point, it becomes clear that the goal of the lesson is to present a scientific principle, namely, that light bends when it moves from one medium to another medium at an angle; but the class has been conducted according to well-established language teaching principles as well. The result is that students were actively communicating in small groups using oral and listening skills to discover the scientific principles.

A Content-Enriched ESL Class

In our first example, a science teacher used language learning methods and techniques in what we are calling language-sensitive content instruction, enabling the instructor to facilitate both content learning and language acquisition for LEP students.

In our second example, we have a chance to look in on a second-grade ESL classroom. Large sheets of paper are taped around the room with the following headings: "My name is _____," "I live in _____," "I eat _____," "I wear _____," and "I am _____." Small groups of students are huddled around pictures and books of various animals--lions, panda bears, whales, jaguars, buffalos, kangaroos. Each group is engaged in research, finding the answers to the questions: "Where does a (lion) live?" "What kinds of food does a (panda bear) eat?" "What kind of covering does a (whale) have?" "What word best describes a (kangaroo)?" One student in each group is leading the discussion; another is recording the group's decisions. In one group a student

suggests that the panda lives in the zoo. Another agrees, but wants to know in what country? They look through the books and magazines until they find a map which shows where the panda lives. The recorder writes "China" on their sheet. They come across a picture of a panda eating bamboo. They decide to write bamboo in the "I eat _____" column. But the real discussion begins when they try to find one word to describe the panda. They know pandas look "cuddly," but they also know that pandas can be "fierce." Another group chose the jaguar. They are filling in the chart on the bulletin board, listing the jaguar's home as "South America" and the animal's covering as "fur."

After the groups complete their work and present their findings to the class, the teacher initiates a discussion on the similarities and differences among these animals. She asks questions such as "How are these animals the same?" Finally, she asks them: "How many pandas are living?" "How many jaguars?" The students conclude that these animals are all in danger of extinction. She tells the students that they will have a chance in future classes to identify other animals (not only mammals, but also birds, reptiles, and fish) that are nearly extinct.

It is easy to see how this content-enriched ESL class differs from the traditional ESL class. Although the students are learning English language skills--listening, speaking, reading, and writing--and getting practice in using particular grammatical patterns (*wh*-questions) and new vocabulary, the class also does much more: it utilizes academic content as its base (i.e., characteristics of animals) and emphasizes the kinds of academic language skills (such as classification and comparison-contrast) which are critical for students to be able to function effectively in a mainstream academic classroom.

A Rationale for Integrating Language and Content Instruction

The focus of many language classrooms today is on the development of oral communication skills in order to help students talk about themselves, relate to their peers and teachers, and function appropriately in the language. This development of interpersonal communicative skills is important, but it is not enough. We also need to provide students with meaningful, relevant content-area instruction and contexts upon which to base their language skills. What Cummins (1981) refers to as Basic Interpersonal Communicative Skills (BICS) is one component of communicative competence, but for students who will be doing academic work in English, more is needed for them to be able to use the language to read science books, do math word problems, or reflect upon and evaluate history lessons. These latter skills, referred to as Cognitive Academic Language Proficiency (CALP) by Cummins, take longer to develop (5 to 7 years) than interpersonal communicative skills and need to be taught in conjunction with them. By using academic content areas as a basis for the language lesson, the teacher focuses attention on higher-order thinking skills such as analyzing, synthesizing, or predicting and provides students with the appropriate language labels and conventions necessary to facilitate class work in that language.

If the ESL teacher can begin using content areas as a basis for the ESL lesson, with attention focused on the higher-order thinking skills such as analyzing, synthesizing, and predicting, then the language minority child will gain a head start on the mainstreaming process. If a student can learn these skills in the first language, the task of transferring them to English will not be as difficult, but the student will still need some directed instruction in the ESL class, using academic subject matter as both the basis for reading and writing and for classroom discussions.

Besides language teachers, regular classroom teachers can also make content instruction more meaningful by using hands-on approaches which relate math and science, for example, to real-life activities. Our first example presented a language-sensitive content classroom where a science teacher used language learning methods and techniques to facilitate both content learning and language acquisition for LEP students. Students get needed support after transition if the mainstream or content teacher uses a language-sensitive approach in the classroom. Further, research evidence suggests that second language learning is facilitated when the learner is taught using meaningful input, when new information is presented and linked to already known information, and when the learning environment is relaxed and motivating (Krashen and Terrell, 1983).

Integrating Language and Content in Bilingual Education

Content-based instruction is a "natural" for bilingual education. In bilingual education programs, content-area instruction may be delivered in two languages. Theoretically, students are taught content areas in their first language while gaining proficiency in English. However, bilingual students need to study the same curriculum and acquire the same knowledge as their English-speaking counterparts. Using academic content as the basis for ESL instruction can help to fill that need. Although we may expect skills and knowledge to transfer from the native language to English, there are inevitably alternative vocabulary, structures, and conventions that LEP students need to learn to become "academically bilingual." Content-based ESL instruction can provide the context for such language development.

ESL instruction in bilingual programs is often pull-out instruction, which creates a fragmented educational program for the LEP student. However, if the ESL teacher reinforces material taught in the first language and provides the English skills related to that content, the student's program becomes more cohesive. When the LEP student leaves the bilingual classroom, he does not leave without content knowledge; this knowledge is simply transferred to the ESL class. This approach calls for generous cooperation among all teachers involved.

Foreign Language Programs

Students learning languages other than English, either in foreign language classrooms or in two-way bilingual programs, can also benefit from the combination of language and content instruction. In foreign language immersion classrooms, for example, two educational goals exist side by side: the learning of another language and the acquisition of content knowledge and basic skills. Students receive all instruction in a language that is not native to them. By integrating language and content, we can work toward both educational goals at the same time. In fact, it is important that this be done so that academic language skills are developed during the process. When a social studies unit in French is presented to native English speakers, relevant vocabulary, grammatical structures and language functions can be systematically treated so that both the content and the language are taught.

We can use this approach in traditional foreign language classes as well. In a German class that meets twice a week, for example, lessons can revolve around topics taught in content classes. A unit from the music class on great composers could be adapted for the German class or a geography unit on topographical features could be reviewed focusing on the topography of Europe. New content can also be introduced, especially when relevant to the language and culture under study.

In two-way bilingual programs, where language minority students and English-speaking students come together for instruction in both languages, the needs of both groups are served by integrating language and content. In a program using Spanish and English as languages of instruction, for example, lessons which incorporate English and math instruction for the Spanish speaker and science and Spanish for the English speaker provide both language and concept development.

Integrating Language and Content: How To

Language and content-area instruction can be integrated in one lesson or unit, or the approach can form the basis for an entire curriculum. Even though the extent of implementation may vary widely, the underlying principles and procedures remain the same. In fact, teachers may start with one lesson or unit at a time and later pool resources with other teachers to develop a whole curriculum from this approach. Moving from a single lesson to an entire curriculum, here are some ideas on how to get started.

1. *Develop one lesson.* Take an objective from a content area curriculum, such as science, and think about the kind of language students need in order to be able to accomplish that objective. You should look for specific vocabulary items as well as grammatical structures and language functions (such as requesting information or defining) that are important for the lesson. Naturally, the level of proficiency of students will need to be considered. Once you have identified both the content and language objectives of the lesson, you can plan activities to accomplish both.

The sample math and science lessons in this guide provide a model for developing integrated lessons. The plans include the following kinds of information, which should be taken into consideration when planning a lesson:

- Grade level
- Language level
- Subject
- Topic
- Key content competencies
- Core vocabulary
- Thinking skills
- Language skills
- School skills
- Interpersonal skills
- Literacy skills
- Materials needed
- Activities
- Assessment
- Support activities (reading, writing, listening, speaking)
- Follow-up activities
- Homework assignments

If you are working together with another teacher, you may want to observe each other's class to allow for immediate feedback on lessons. Once you have tried out a lesson, you may need to modify it accordingly. Collect your plans in a file, particularly if there is interest in developing complete units or an entire curriculum.

2. *Develop a unit in one academic area.* This level provides a more sustained effort than a single lesson, but the approach is the same. A unit in math, social studies, science or any other content area can be adapted in this way. For example, a unit on word problems in math is ideal for integration with language objectives (think of the practice on English comparatives that could be incorporated, based on phrases like "greater than," "faster than," and so on). Again, content objectives need to be examined to determine what language structures and functions can be taught or reinforced at the same time.

   The advantage to developing a series of lessons rather than just one is that it then becomes possible to spiral the language being taught, building from one lesson to the next. In other words, a particular structure can be introduced in one lesson, then reinforced and expanded in later lessons in the unit.

3. *Develop a content-based ESL or sheltered English curriculum.* This is, of course, the most ambitious project to undertake. Although it is possible to develop and implement a curriculum on an individual basis, it is probably more effective to work with others in such an endeavor. In most school systems, teams of teachers regularly collaborate on curriculum development, either informally or at the request of the school district. You might work with a group of teachers who have tried combining language and content instruction in their classes and pool their resources to produce a curriculum. The collaboration of content area and ESL teachers is particularly effective.

Naturally, a curriculum should reflect local needs. Requirements for content-area topics to be covered need to be considered, as well as the choice of a format best suited to the local population. A totally integrated curriculum for LEP students would combine language instruction with all content areas. Alternatives include content-enriched English language instruction and language-sensitive content classes, such as sheltered English classes for LEP students. For example, an ESL curriculum might be developed in conjunction with the social studies strand. In a bilingual program, the content-enriched ESL class might reinforce concepts taught in the native language. In an ESL pull-out situation, the curriculum would reinforce concepts presented in English in a mainstream classroom, where LEP students might number only a few among a class of native speakers of English. In a self-contained classroom, the ESL curriculum could provide the social studies component for a group of LEP students.

Whether a single lesson or a whole curriculum, teachers can integrate language and content-area instruction in ways that make learning both more effective. Although some careful preparation is needed in advance to plan the lessons, it is well worth the effort.

Implementing Integration of Language and Content-Area Instruction

If teachers in a school want to implement an integrated language and content program for LEP students, there are several factors they need to consider. Perhaps the most important is to identify content or mainstream teachers who are interested in modifying their instruction for LEP students and ESL teachers who are interested in incorporating subject matter into their language classes. It is crucial for members of these two groups to meet and work together for the program to be successful. The meetings should begin as early as possible in the school year to allow sufficient time for curriculum development, discussion of methods, and identification of materials for use in the program. Some staff development which focuses on methods and materials for both groups of teachers will also be necessary. As in other types of educational innovation, the principal's support, especially in the early stages, is critical.

Teachers may want to begin with a few pilot classes to demonstrate the effectiveness of the approach and to build support for it within the school.

For example, classes such as art, music, or physical education are ideal starting points because they combine high interest with relatively low language requirements. Later, the program may be expanded to include math, social studies, and science.

After a school has decided which courses to include in this approach, a curriculum will need to be developed. The first step is a thorough review of subject-matter competencies by grade level. The next step is to identify language objectives which complement each competency. Specific vocabulary should be identified together with relevant grammatical structures, functions, and literacy skills. Because this development phase will take some time, it probably would be best to set aside part of a summer for a curriculum team to meet. That team should also begin identifying appropriate materials to implement the curriculum; these may be commercially available or available from cooperating school districts.

Unfortunately, there are currently few materials specifically designed for the content-enriched language class or for the language-sensitive content class, so teachers will need to work in teams to develop these. The language teacher can focus on language demands while the content teacher covers content objectives. The language teacher will probably feel more qualified developing vocabulary and other preview or follow-up activities. The content teacher, on the other hand, will be better qualified to develop activities related to the basic concepts and principles of each subject area. It is vital, nevertheless, for both kinds of teachers to pay attention to both language and content to ensure that the materials provide for solid academic language and skill development.

Activities which use interactive language practice are very effective, i.e., role plays, situational dialogues, problem solving for students working in pairs (such as those based on an information gap), and other meaningful exchanges. Methods which require students to respond with actions, rather than words, are excellent for beginning language students. Students with very limited language proficiency may need to focus on survival language and skills before a heavy emphasis on content-based instruction is initiated. As students gain proficiency, reading and writing activities incorporating more sophisticated content and academic skills can be introduced and expanded.

Potential Problems

Facilitating cooperation between language and content-area teachers may be difficult. Schools are becoming increasingly compartmentalized, especially at the secondary level, and opportunities for communication or collaboration may be limited. Some teachers may be reluctant to participate in cross-disciplinary programs of this type. However, the following guidelines may be of assistance.

1. Not all teachers need to participate. A core group of interested and willing teachers can develop their own integrated program which meets the school's curriculum objectives.

2. Support from the administration is crucial at all stages of the process (release time, allocation of resources, public statements by the principal).

3. After a program has been established, other teachers should be invited to join the effort by teachers who have participated successfully.

Language teachers may be resistant to participate without additional inservice training in the content areas. This is particularly true in the case of math and science. They may feel more comfortable starting with language arts/literature and social studies/culture as their content areas. Likewise, content/mainstream teachers may not know how to adapt their subject matter to make it accessible to students with limited language proficiency and may not be comfortable focusing on language instruction or using small group approaches.

Another potential problem emerges from the normally wide range of educational backgrounds and language proficiencies existing within a given class. Although language teachers are accustomed to dealing with students at various levels of language proficiency in a classroom, content teachers may not be. These teachers need to be provided with inservice training focusing on classroom management and small group or peer instruction as a way of accommodating these differences.

Finally, school and community attitudes may present a problem. Students, teachers, and parents all need to understand that this approach does not constitute a "watered-down" curriculum. Instead, it emphasizes the most important objectives of the mainstream curriculum while addressing language development goals. Programs for LEP students should not be equated with services for learning disabled or other special education students. Content-enriched language or language-sensitive content programs help students to realize their full potential in a manner which is sensitive to their linguistic needs.

Resources

The Center for Language Education and Research (CLEAR) at the Center for Applied Linguistics (CAL) is presently collecting curriculum materials for use in programs which integrate content-area and language instruction. Many are also available through ERIC (Educational Resources Information Center). The list of references included in this guide provide both theoretical and practical information. For further information, interested persons may contact one of the authors at the address below:

Center for Applied Linguistics
1118 22nd Street, N.W.
Washington, DC 20037

Tel.: (202) 429-9292

SAMPLE LESSON 1

Subject: Science
Topic: *Plants*
Objective: To identify various characteristics of plants

Grade: 2
Level: Beginning

Activity - (15 minutes)

- Bring in a house plant. Show it to the students while talking about it. Example: "Look at this pretty plant. It's in a pot. See its green leaves. Here's a flower. It's on the stem." Continue pointing to the different parts of the plant that can be seen: stem, leaves, flower, dirt (soil). Do TPR activity with the core vocabulary words, e.g., "*Point* to the *leaves*."

- Draw a picture on the board of a plant with roots. Explain that roots are in the dirt in the pot. Review the names of the parts of the plant using the picture on the board.

- Let students touch the plant. Ask questions about the plant: "What color are the leaves/the stem?" How does the leaf/stem feel?" "Is it smooth/rough?" "What's above/below the dirt?"

Assessment

- Cut up a real plant and put the various parts inside a box. Have students pick out plant parts and identify them.

Reading/Writing Support Activity - (10 minutes)

- Put a drawing of a simple plant on the blackboard and label the different parts with flashcards. Read aloud the words while labeling the different parts. Then, take off the flashcards and put them on the table. Have students come forward and put the labels on the different parts of the plant picture.

Follow-Up Activity

- (15 minutes) Take students outside and have them collect different parts of plants. Have them come back to the classroom and sort by part (e.g., all stems together). Save some parts for future lessons.

- (5 minutes) Pass out magazines and have students cut out pictures of plants or flowers and paste them on pieces of paper. Have students label the parts of the plants in the pictures. Move around the room and ask students questions, e.g., "Show me a *leaf*"; "What color is the flower?"

- (5 minutes) Song: "Little Flowers"

Vocabulary

roots	above/below
stem	under
leaves	in
flower	
plant	
dirt/soil	
pot	

Skills

Thinking: Classifying, Identifying
Language: Describing
School: Participating in class
Literacy: Sight word recognition

Materials Needed

House plant
Parts of real plants

Reading/Writing Materials

Flashcards with names of plants, flowers

Follow-Up Materials

Magazines with pictures of plants, flowers

From: *PREP (Preparing Refugees for Elementary Programs) Curriculum*, U.S. Department of State, Overseas Refugee Training Program (Draft).

SAMPLE LESSON 2

Subject: **Math** Grade 2
Topic: *Counting* Level: Beginning
Objective: To identify place value

Activity - (30 minutes)

- Divide the class into ten groups. Divide bottle caps into ten piles (use at least 125 caps per group). Have each group place one pile of bottle caps in a plastic bag. Say, "Count out piles of ten." Give time for each group to divide their caps into sets of ten. Observe whether the students understand the instructions.

- Pointing to one group, say, "How many groups of ten do you have?" Say, "Let's count by tens to see." Count, "Ten, twenty..." etc. "How many bottle caps do you have?" Give different colored/labeled tickets for piles of hundreds and remaining tens and ones.

- Give each group an appropriate number of tickets for the total number of bottle caps they hold.

- Continue until piles of bottle caps and tickets show the same number.
  Ask, "How many hundreds do we have?"
  "How many tens do we have?"
  "How many ones do we have?"

- Have students place tickets representing the total number of their bottle caps in a place value pocket.

Assessment

- Do Total Physical Response (TPR) activity with individual students using the core vocabulary.

Vocabulary

count out
total
hundreds
tens
ones
class

Skills

Thinking: Sensory/auditory/visual learning, spatial relations
Language: Answering questions, giving information, counting
School: Participating in groups, working individually
Literacy: Counting

Materials Needed

10 plastic bags
Collected bottle caps
Place value pocket chart
10 tickets marked 100 (may need more)
30 bundles of 10's
30 single tickets

From: *PREP (Preparing Refugees for Elementary Programs) Curriculum*, U.S. Department of State Overseas Refugee Training Program (Draft).

SAMPLE LESSON 3

Subject: Math
Topic: *Money*
Objectives: To round off amounts to the nearest dollar
To make estimates by rounding off amounts
To make change from dollars

Grade: 3
Level: Beginning

Activity - (30 minutes) Role play:

- Set up a store in the classroom. Give each student a "dollar" to spend. Tell the students, "You have one dollar to spend in the store today. I will be the first storekeeper."
- Go to the store area and say, "The store is open. _____ will be the first customer. Come in, _____. What would you like to buy today?" Allow student to make choices. Student must say, "I would like to buy _____." Respond by saying, "Here are your things. That will be ___ cents. One dollar minus ___ cents is ___ cents. Here is your change. Thank you for coming to my store."
- "Customer" becomes "storekeeper" (clerk).
- Rotate until all have had the opportunity to participate in the role-play.
- Provide subtraction equations until the students are able to verbalize the math problems themselves.
- Allow time for the students to communicate what they would like to "buy."

Assessment

- Give students "dollar" bills and cards marked 1¢ to 25¢ (or play money). Give several word problems which include subtracting amounts from $1.00. "Show and tell me how much money you would have left."

Math Literacy Support Activity

- Each student writes his/her own math problems for classmates to solve using "dollar" and "cents."

This lesson can be adapted to suit the level of competency, e.g., use $5 or $10 instead of one dollar.

Vocabulary

storekeeper	clerk
customer	cost
change	

Structures

Wh- questions and modal *would*. What would you like to buy? How much change would you have?

Skills

Language:	Answering/asking questions, following directions
Interpersonal:	Participating in class activity, listening
Thinking:	Designing problems to be solved

Materials Needed

1 "dollar" per student, change cards or play money, various items marked with prices for store.

Follow-Up Activity

Teach the children to estimate change by rounding to nearest ten and adding, e.g.: It cost 79¢. Round to 80¢. Change is approximately 20¢.

Homework

Students copy and solve subtraction word problems, e.g.,

1.00
.36 One dollar minus
___ thirty-six cents is
$ .64 is sixty-four cents.

From: *Content-Based ESL Curriculum*, Hartford Public Schools (Draft).

References

Cantoni-Harvey, G. (1987). *Content-area language instruction: Approaches and strategies.* Reading, MA: Addison-Wesley.

Chamot, A.U. (1985). English language development through a content-based approach. In *Issues in English language development.* Rosslyn, VA: National Clearinghouse for Bilingual Education/ InterAmerica Research Associates, Inc., 49-55.

Chamot, A.U. (1985, December). Guidelines for implementing a content-based English language development program. *NCBE Forum*, *8*:6.

Chamot, A.U., & O'Malley, J.M. (1986). *A cognitive academic language learning approach: An ESL content-based curriculum.* Rosslyn, VA: National Clearinghouse for Bilingual Education/ InterAmerica Research Associates, Inc.

Chamot, A.U. & O'Malley, J.M. (1987). The cognitive academic language learning approach: A bridge to the mainstream. *TESOL Quarterly*, *21*:2, 227-249.

Crandall, J.A., & Willetts, K. (1986, March). Content-based language instruction. *ERIC/CLL News Bulletin*, pp. 1, 7, 8.

Crandall, J.A., (Ed.). (1987). *ESL through content-area instruction.* West Englewood Cliffs, NJ: CAL/Prentice-Hall Regents.

Crandall, J.A., Dale, T.C., Rhodes, N.C., & Spanos, G. (in press). *English skills for algebra.* Englewood Cliffs, NJ: CAL/Prentice-Hall Regents.

Cummins, J. (1981). The role of primary language development in promoting educational success for language minority students. In *Schooling and language minority students: A theoretical framework.* Sacramento: California State Department of Education.

Curtain, H. A. (1986, March). Integrating language and content instruction. *ERIC/CLL News Bulletin*, pp. 1, 10, 11.

Krashen, S. & Terrell, T. (1983). *The natural approach.* San Francisco: Pergamon/Alemany Press.

Mohan, B.A. (1986). *Language and content.* Reading, MA: Addison-Wesley.

Mohan, B.A. (1986, March). Language and content learning: Finding common ground. *ERIC/CLL News Bulletin*, pp. 1, 8, 9.

Spanos, G., Rhodes, N.C., Dale, T.C., & Crandall, J.A. (1987). Linguistic features of mathematical problem solving: Insights and applications. In J. Mestre & R. Cocking (Eds.), *The influences of language and culture on learning mathematics*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Willetts, K. (Ed.)(1986). *Integrating language and content instruction* (Educational Report No. 5). Los Angeles: University of California, Center for Language Education and Research.

About the Authors

Jo Ann (Jodi) Crandall is a Division Director at the Center for Applied Linguistics in Washington, D.C. She is the current President of TESOL and co-author of *English Skills for Algebra* (in press), an interactive student textbook which integrates English language and algebra instruction. Dr. Crandall is the editor of *ESL Through Content-Area Instruction: Mathematics, Science, Social Studies* (CAL/Prentice-Hall Regents, 1987).

George Spanos is a Research Associate in the Division of International and Corporate Education at the Center for Applied Linguistics. He is co-author of *English Skills for Algebra* (in press) and is currently the Director of a project for developing materials for the integration of science and language instruction for the Center for Language Education and Research (CLEAR).

Donna Christian is the Associate Director of the Research Division at the Center for Applied Linguistics. She coordinates the Center's projects with the Center for Language Education and Research (based at UCLA) and has written various publications on language in education. She is presently involved in the collection and annotation of curriculum guides and other materials related to content-based instruction.

Carmen Simich-Dudgeon is a Research Associate in the Research Division of the Center for Applied Linguistics. She is presently the principal investigator of a project dealing with significant features of academic language used in first and second language classrooms. She was most recently the Director of a project for Hartford Public Schools, where she was responsible for developing a content-based ESL curriculum for Grades K-6.

Karen Willetts is a Research Assistant in the Research Division of the Center for Applied Linguistics. She is presently involved in the collection and annotation of curriculum guides and other materials related to content-based language instruction. She is the editor of a Center for Language Education and Research (CLEAR) monograph on integrating language and content instruction.